

## JADARA

---

Volume 50 | Number 3

Article 2

---

11-12-2016

# An Overview of Limited Literature on Diagnosis and Treatment of Deaf and Hard of Hearing Individuals With Pediatric Bipolar Disorder

Hannah A. Joharchi  
*Gallaudet University*

Carolyn A. Corbett  
*Gallaudet University*

Michele Dadson  
*Children's National Medical Center*

Follow this and additional works at: <https://repository.wcsu.edu/jadara>



Part of the [Child Psychology Commons](#), and the [Psychiatric and Mental Health Commons](#)

---

### Recommended Citation

Joharchi, H. A., Corbett, C. A., & Dadson, M. (2016). An Overview of Limited Literature on Diagnosis and Treatment of Deaf and Hard of Hearing Individuals With Pediatric Bipolar Disorder. *JADARA*, 50(3), 110-136. Retrieved from <https://repository.wcsu.edu/jadara/vol50/iss3/2>

The literature regarding therapeutic treatments with *d/Deaf and hard of hearing (DHH)*<sup>1</sup> children is limited, especially regarding bipolar disorder. This paper includes a review of some information pertaining to adults with bipolar disorder, along with a review of bipolar disorder in children, treatment options, and literature specifically pertaining to treatment for bipolar disorder in DHH children. Recommendations for future research are also provided.

Diagnoses and terms used to describe symptoms and mood dysregulation vary in bipolar disorder literature. When the terms *bipolar disorder* or *pediatric bipolar disorder* are used in this paper, they represent the definition for bipolar disorder as described in the diagnostic statistical manual, fifth edition (DSM-5). There are not separate diagnostic criteria for bipolar disorder in children and adults; however, increased cycling of moods can be seen in children. Additionally, diagnoses concerning the cluster of symptomology seen in bipolar disorder in children are highly debated (Margulies, Weintraub, Basile, Grover, & Carlson, 2012).

*Pediatric bipolar disorder* or *bipolar disorder* is defined as manic (e.g., expansive, elevated, and irritable mood) and depressed mood (e.g., psychomotor retardation, fatigue, etc.) (American Psychiatric Association, 2013). The DSM5 includes hypomanic, manic, and mixed manic, and depressive episodes. Additionally, throughout this paper, *bipolar*

---

<sup>1</sup> In this paper, *DHH* is used to refer to children who identify as being deaf, Deaf, or hard of hearing, and have a physiological hearing loss. “There is an ongoing flux in terms of how deaf people define themselves as individuals and members of their cultures” (Maxwell-McCaw, Leigh, & Marcus, 2000, p. 9). Therefore, the researcher refers to DHH individuals with consideration of both identity and physiology.

*disorder* and *pediatric bipolar disorder* refer to bipolar I and II disorder and the bipolar disorder spectrum. *Dysregulated mood* refers to a mood that was once monitored and regulated and is now destabilized to a depressed, manic, or mixed state, and is on the bipolar spectrum. While definitions for the terms *bipolar disorder* or *pediatric bipolar disorder* and *dysregulated mood* have been established for the purposes of this paper, clinicians' perspectives of diagnostic differentiation continue (Margulies et al., 2012).

Awareness of social-emotional exchanges and dynamics are involved in most interactions (Barrett & Russell, 2015). Throughout this paper, *emotional awareness* is used as an overarching term to indicate the neurocognitive, social, and psychological implications of deficits in awareness that are associated with pediatric bipolar disorder. *Emotion recognition* describes the ability to judge emotions (Lewis, Haviland-Jones, & Barrett, 2008). Emotion recognition is significant for social and survival purposes (Lewis et al., 2008). In studying recognition of facial expressions in 47 people with bipolar disorder, researchers found significant misidentifications of emotions such as disgust, fear, surprise, sadness, etc. (Hoernagel et al., 2011). Emotion recognition may be a relevant component of supporting children with bipolar disorder, since literature suggests that there are people with bipolar disorder who have "difficulties in affect recognition and in emotional experience" (Hoernagel et al., 2011). People who are depressed or manic may miss social cues and therefore, recognizing emotions may be difficult. However, even when stabilized, recognizing social cues persists and can significantly impact their social interactions, feelings of isolation, and the ability to identify and respond appropriately to the emotions of others.

## Issues of Prevalence

While there are currently no data concerning prevalence rates of bipolar disorder among DHH children, there are a limited number of prevalence studies regarding DHH adult psychiatric populations. It may be beneficial to address literature regarding DHH adults with bipolar disorder to gain some understanding of prevalence rates in the available literature. Findings indicate that prevalence rates of psychotic disorders in deaf people receiving inpatient and outpatient care are quite different than the prevalence rates of hearing psychiatric inpatients and outpatients. There are nearly twice as many DHH people in inpatient and outpatient care diagnosed with schizophrenia, schizotypal, delusional, neurotic, and somatoform disorders as hearing peers (Appleford, 2003). Additionally, findings indicate that in comparison to hearing inpatients, DHH people stayed in treatment almost twice as long (hearing=30 days and deaf=59 days) (Appleford, 2003). Yet there are far fewer DHH inpatients and outpatients diagnosed with bipolar disorder in comparison to hearing counterparts (one-third of hearing peers) (Appleford, 2003). Given this prevalence paradox, more needs to be explored in the area of diagnosis and treatment among DHH patients with bipolar disorder.

Another prevalence study regarding DHH adults investigated diagnostic characteristics of DHH and hearing psychiatric individuals in an outpatient center (Diaz, Landsberger, Povlinski, Sheward, & Sculley, 2013). In this study, the researchers suggested that the prevalence rates of psychiatric disorders in DHH individuals are significantly different from the prevalence of diagnosis in their hearing counterparts (Diaz et al., 2013). Linguistically and culturally competent clinicians staffed the outpatient center. Given this more culturally and linguistically accessible outpatient center, researchers made recommendations that clinicians who are fluent in American Sign

Language (ASL) increase their involvement concerning diagnosis and treatment (Diaz et al., 2013).

### **Neurocognitive Differences in Bipolar Disorder**

While the specific organic origins of bipolar disorder are unknown, there is literature suggesting that this disorder affects or is affected by particular regions of the brain, some related to emotion recognition. Findings indicate that white matter hyperintensities or lesions in the frontal lobe may be correlated with deficits in memory, executive functioning, and affected regulation (Bearden, Hoffman, & Cannon, 2001). Again, a review of the available literature concerning adults with bipolar disorder may be useful, given that there is limited neuropsychological information about the pediatric bipolar disorder population. In a review of studies regarding neuroanatomy and neurophysiology of adults with bipolar disorder, the reviewer acknowledged the argument that there might be issues with examining the structural abnormalities in bipolar disorder given the cyclical changes of the disorder (Bearden et al., 2001). Research indicated deficits in the frontal lobe region and suggested that these deficits are not due to psychosis or unipolar depression, implying that the deficits may not be related to changes in mood (Bearden et al., 2001).

Researchers also investigated memory impairment in patients with bipolar disorder (Bearden et al., 2006). Memory is a bi-directionally important aspect regarding this population, in that memory can impact someone's emotion regarding an event, and an event can trigger an emotion influencing how a person remembers the event (Lewis et al., 2008). Researchers explored memory processes in patients with bipolar or unipolar depression (Bearden et al., 2006). Adults with unipolar depression ( $n=30$ ) and adults with bipolar disorder ( $n=30$ ) were matched for severity of symptoms, and controls were matched by

demographic information ( $n=30$ ) and assessed for cognitive function and memory. In comparison to the adults in the control group, both patients with unipolar depression and bipolar disorder had lower scores for verbal recall and recognition (Bearden et al., 2006). Differences between patients with unipolar depression and bipolar disorder were found regarding number of hospitalizations and family history of a mood disorder (Bearden et al., 2006). While there were some differences, similar deficits in memory suggest a shared underlying pathophysiology related to the medial temporal region.

**Neurocognitive differences in pediatric bipolar disorder.** While most studies regarding neurocognition in patients with bipolar disorder were conducted among adults, efforts to investigate neurocognition in younger populations have also taken place. Earlier studies suggested dysfunction in the prefrontal cortex (Bearden et al., 2001), so researchers explored the effects of comorbid diagnoses, medication, and mood on executive functioning (Bearden et al., 2007). The results showed deficits in memory (e.g. spatial working memory and problem solving with a memory component) and executive functioning (e.g. cognitive flexibility, planning, difficulty with verbal fluency) in comparison to children without pediatric bipolar disorder. Differences in mood were not correlated to performance (Bearden et al., 2007). Additionally, deficits found in the frontal lobe and overlap of symptomology and pathophysiology showed there were important implications for differential diagnosis with attention-deficit hyperactive disorder (ADHD) and bipolar disorder (Bearden et al., 2007).

After a pioneer study of neurocognitive deficits in pediatric bipolar disorder took place, additional studies explored neuroanatomical and neurocognitive differences possibly experienced by those children (Joseph, Frazier, Youngstrom, & Soares, 2008). A quantitative and qualitative review of 10 subsequent studies showed that the largest

differences were found in verbal memory and executive functioning (Joseph et al., 2008). Researchers linked cognitive challenges that children with bipolar disorder might experience to neurobiological systems and neuroanatomical structures that are disrupted (Joseph et al., 2008). This was done in order to identify markers before the onset of symptoms and to better understand the disorder (Joseph et al., 2008). While verbal memory ( $d=.77$ ) and executive functioning ( $d=.62$ ) issues yielded the most significant difference, reading ( $d=.40$ ), motor speed ( $d=.33$ ), and overall intelligence ( $d=.32$ ) all indicated only small differences (Joseph et al., 2008). Lower verbal memory and executive function scores may impact patients' socialcognitive skills such as the ability to attend, remember, and organize (Joseph et al., 2008). Memory and organizing information, including emotional information, are required to learn social skills.

The area of social cognition was further investigated in a meta-analysis (Samamé, Martino, & Strejilevich, 2012), which identified emotion recognition and theory of mind through a review of 20 studies reviewing social cognition. In comparison to controls, significant differences were found in theory of mind and overall emotion processing (Samamé et al., 2012). Significant differences were also found in both mentalizing skills and facial emotion recognition, indicating issues of emotion processing and theory of mind (Samamé et al., 2012). However, not all of the studies specified the emotions studied, and there was no difference found between emotions (Samamé et al., 2012). When studies used various stimuli and an eye tasks to measure emotion recognition and theory of mind, a significant difference was also found in comparison to controls (Samamé et al., 2012). These findings were not associated with medications that patients were taking.

Another study investigated the variables that are frequent and impact moods, such as differentiating between a euthymic or manic cycle, neuropsychological functioning, and

medication's effects on neurocognitive deficits (Pavuluri, et al., 2006). Cognitive deficits were found in euthymic, treated groups, and unmedicated and unregulated or manic groups. With or without medication, deficits found in memory and organizing have important implications for social functioning.

Rosen and Brendan (2010) explored cognitive and neural functioning in pediatric bipolar disorder, seeking neurocognitive clarification of bipolar disorder. Much like in adult bipolar disorder, there appeared to be deficits in the fronto-limbic region in children with bipolar disorder (Rosen & Brendan, 2010). A review also showed that most studies in the field focus on emotion-labeling deficits, since this is a significant area of concern in pediatric bipolar disorder (Rosen & Brendan, 2010). Additionally, researchers suggested that children with bipolar disorder might process emotional stimuli in a way that actually contributed to their symptomology (Rosen & Brendan, 2010). These findings provided information regarding the perplexing neurocognitive cluster of symptomology that can be seen in pediatric bipolar disorder and may serve as implications for treatment.

### **Observed Social-Emotional Differences**

While neurocognitive deficits are a recent area of exploration regarding bipolar disorder, the observed emotional challenges are also an important area of consideration. In efforts to better understand the social-emotional challenges that children with bipolar disorder may experience, researchers tested children's social-cognition, flexibility, and inhibition while controlling for age, intelligence, and gender (McClure et al., 2005). Tests of social cognition assessed the patient's language specifically in social situations (such as interruptions or introductions), administered a facial expression recognition task requiring each patient to inhibit her or his response, and assessed motor inhibition via indices from continuous performance measurements. Results indicated that individuals with pediatric



bipolar disorder had significantly more trouble with social pragmatics, emotion recognition, and response flexibility in comparison to controls. However, there was no significant difference in inhibition during continuous performance tasks. Identification of deficits in social cognition and motor flexibility might help improve diagnosis and treatment. Additionally, the findings indicated that pediatric bipolar disorder may be correlated to missing or misunderstanding social cues, experiencing challenges in responding flexibly, and having difficulty recognizing facial affect.

In regards to diagnosis and treatment, additional issues and symptoms may complicate pediatric bipolar disorder. For example, comorbid anxiety often overlaps with bipolar disorder (Sala et al., 2014). When a child becomes dysregulated, his or her anxiety might also increase. One of the largest studies ( $n=413$ ) regarding pediatric bipolar disorder included both an investigation of the effects of anxiety on time of mood regulation and these effects over a five-year period (Sala et al., 2014). This longitudinal study suggested that there is a significant relationship between time of regulation and anxiety level. Anxiety was correlated with longer times regulating back to a stable mood and more cycling of moods (e.g., manic, hypomanic, euthymic, depressed, mixed). These findings highlight the importance of considering the impact of anxiety concerning pediatric bipolar disorder.

**Emotion recognition differences in pediatric bipolar disorder.** Literature regarding patients with bipolar disorder who also had issues with emotion recognition indicated an impaired quality of life regarding both social and daily activities (Aydemir, Akkaya, Uykur, & Erol, 2013). In order to better support children with bipolar disorder, researchers studied the issue of social functioning by assessing participants' facial expression recognition (McClure, Hoberman, Pine, & Leibenluft, 2003). Small sample

sizes were chosen: bipolar disorder ( $n=11$ ), anxiety disorder ( $n=10$ ), and control ( $n=25$ ) groups (McClure et al., 2003). Adolescents looked at photographs of children with various levels of intensity in expressions of happiness, sadness, anger, or fear. Findings revealed that participants in the pediatric bipolar group perceived significantly more faces as angry. Not only is emotion recognition difficulty associated with less quality of life, but this study also signified findings that better illuminated the potential challenges faced by children with bipolar disorder.

Differences in emotion recognition were investigated in children with severe mood dysregulation (SMD) and bipolar disorder (Rick, et al., 2008). Parents were given questionnaires and screening measures as their children were administered an emotional expression multimorph test. The multimorph test displayed gradations of emotions via facial images. Beginning as neutral faces, the images gradated towards an emotion: happiness, surprise, fear, sadness, anger, or disgust. When participants recognized the emotion the morph displayed, they clicked “stop.” Results indicated equally significant deficits in both bipolar and SMD children, and provided evidence for diagnosis differentiation issues and issues in separating mood disorder research participants into groups.

Facial labeling tasks were given to pediatric bipolar and severe mood dysregulation (SMD) individuals ages 8-18 (Kim, et al., 2013). Video eye tracking technology was used to record children as they looked at pictures of people displaying a facial expression (i.e. neutral, happy, sad, anger, or fear). The stimuli were morphed into various levels, gradually making the facial expressions more difficult to decipher. Children with bipolar disorder or SMD made significantly more errors in labeling emotions than the control group. These findings provided evidence regarding challenges possibly faced by children

with bipolar disorder. While previous studies have had similar findings, the methodology continues to improve, becoming increasingly precise.

Individuals who struggle with bipolar moods may miss cues and/or emotions. The literature suggests that an individual with bipolar disorder will likely have cognitive difficulties deciphering an emotional or social cue (McClure et al., 2005). The literature also discusses that even once moods are stabilized, some of these recognition issues persist. In turn, this can significantly impact social interactions and the ability to recognize other people's emotions.

### **Environmental Correlations with Bipolar Disorder**

While research indicates a high heritability of bipolar disorder, it is important to consider additional factors (Kieseppa, Partonen, Haukka, Kaprio, & Lonqvist, 2004). Therefore, it is relevant to acknowledge environmental influence and impact on bipolar disorder, especially with the unique importance of environment for DHH children. Literature suggests that trauma is likely the most highly correlated environmental factor regarding bipolar disorder (Etain, Henry, Bellivier, Mathieu, & Leboyer, 2008). Etain et al. (2008) explained that further research needed to be conducted to refine this seemingly bidirectional correlation, but that trauma can certainly impact a child's affective regulation.

Environmental factors are especially important to consider for DHH children, since environments vary in communication access, access to sufficient (linguistically and culturally) mental health care, family support, and education. For example, barriers to communication with either one's family, educators, or mental health clinicians, could lead to misinformed diagnosis and treatment.

### **Available Therapeutic Treatments Used with Pediatric Bipolar Disorder**

While children who have bipolar disorder may receive multiple forms of treatment (e.g., psychopharmacological treatment, family therapy, group therapy, etc.), available literature is limited pertaining to evidence-based treatment with this population. A workgroup was tasked with developing a treatment protocol for working specifically with children who have bipolar disorder (Kowatch, et al., 2005). The article discussing this workgroup provided a thorough description of symptomology from pressured speech to hypersexuality, further clarifying nosology for clinicians treating pediatric bipolar disorder. While researchers warn that treatment suggestions are not tailored to all children, Kowatch et al. (2005) discussed the importance of establishing broad treatment guidelines for symptomology of pediatric disorder.

In efforts to develop evidence-based treatment for pediatric bipolar disorder, a large study ( $n=145$ ) was conducted to determine the effects of family-focused therapy in conjunction with psychopharmacological treatment (Miklowitz, et al., 2014). Adolescents with bipolar disorder were treated with psychopharmacological and family-focused therapy (such as a treatment group) or psychoeducation and psychopharmacological treatment (such as a control group). Participants' mood regulation and symptomology were monitored for two years as they received treatment. Research indicated that family-focused treatment was no more beneficial in recovering from dysregulation and re-stabilization or delaying recurrence than brief psychoeducation. While family-focused treatment is typically used with adults who have bipolar disorder, these findings indicated it was not significantly effective with the adolescent population.

In a slightly younger group of participants, family-focused therapy proved even more effective (Miklowitz, et al., 2013). Participants were not diagnosed with bipolar

disorder, but had mood dysregulation issues and a significant genetic loading for bipolar disorder (Milkowitz et al., 2013). Families underwent one year of family-focused therapy (Milkowitz et al., 2013), and the findings revealed that family-focused therapy was associated with faster recovery from dysregulated moods (Milkowitz et al., 2013). Family-focused therapy may prove to better fit younger populations with mood dysregulation challenges as opposed to adolescent counterparts.

### **DHH Patients with Pediatric Bipolar Disorder**

The literature regarding pediatric bipolar disorder reflects the debate regarding diagnosis (Kowatch et al., 2005; Joseph et al., 2008). Literature regarding pediatric bipolar disorder with DHH people suggests additional complications in regard to diagnosis and treatment (Appleford, 2003; Diaz et al., 2013; Landsberger, Diaz, Spring, Sheward, & Sculley, 2014; Landsberger, Sajid, Schmelkin, Diaz, & Weiler, 2013).

While a variety of issues with prevalence and diagnosis may be considered, experts have made recommendation for clinicians fluent in ASL (Diaz et al., 2013; Landsberger et al., 2014). These studies also emphasized the importance of key components concerning informed and competent care (e.g., cultural sensitivity and appropriate diagnosis fitting an individual in the context of his/her environment). Additionally, researchers specifically recommended assessment and treatment through cultural and linguistic sensitivity of the following: language modality and fluency, auditory history, and cultural identification (Landsberger et al., 2013). Studies suggested that the use of an interpreter is necessary, or called for clinicians who use sign language (Landsberger et al., 2013). Culturally and linguistically sensitive evaluations of DHH children and adolescents may help provide better support for whatever psychiatric challenges they experience.

### **Available Therapeutic Treatments Used with DHH People with Bipolar Disorder**

The Juvenile Bipolar Research Foundation (JBRF) discussed a number of promising resources regarding assessment, diagnosis, and treatment with and for children with bipolar disorder (2016). There is no such literature specifically pertaining to DHH children with bipolar disorder on JBRF's website, although a list of miscellaneous resources can be located in table 1. While research regarding treatment of DHH people with psychiatric diagnoses is limited, a restricted number of case and pilot studies can be seen in table 2 (Markowitz & Nininger, 1984; Gupta & Caddy, 2007; Waxmonsky, et al., 2013).

An adolescent in her first year of college was treated for a manic episode in an inpatient unit with hearing individuals (Markowitz et al., 1984). By working with interpreters for communication facilitation, clinicians found that this woman had a history of hypomanic episodes, responded well to psychopharmacological treatments usually administered with patients who have bipolar disorder (e.g., atypical antipsychotic medications), and had three aunts diagnosed with bipolar disorder. Additionally, researchers acknowledged the paradox or dispute of prevalence of bipolar disorder in DHH patients. Towards the end of the young lady's inpatient treatment, she began to discuss lifetime struggles with emotional issues such as feelings of inadequacy, and became more emotionally aware of said experiences.

Another case study revealed a Deaf woman's experience with discovering that she had bipolar disorder later in life (Gupta & Caddy, 2007). After a lifetime of depressive episodes, she was finally diagnosed when she experienced a hypomanic period (Gupta & Caddy, 2007). Upon receiving care, through text and an interpreter, clinicians investigated and identified a history of depressive episodes and at least one hypomanic episode (Gupta & Caddy, 2007). When the patient and her clinician began treatment by writing back and

forth, the patient asserted that this method was “boring” and they switched to texting and later had some sessions with an interpreter. Individual treatment and psychopharmacological intervention appeared to help stabilize the patient’s mood. Researchers reported that soon after the patient’s mood stabilized, the patient discontinued the psychopharmacological intervention and her mood returned to a dysregulated period (Gupta & Caddy, 2007). The patient was advised to continue psychopharmacological treatments and her mood restabilized (Gupta & Caddy, 2007). This case study provides another lens into what approaches are being used with DHH individuals with bipolar disorder.

Findings from a group therapy pilot ( $n=7$ ) suggested a treatment plan of dysregulated mood in DHH children diagnosed with ADHD or severe mood dysregulation (Waxmonsky et al., 2013). While none of the participants were reported to have bipolar disorder, this study is closest to the population and most like the proposed treatment of study in this research proposal (Waxmonsky et al., 2013). Children attended nine cognitive-behavioral group therapy sessions focused on affect regulation while their parents attended parent-training group sessions (Waxmonsky et al., 2013). The children ranged in age from 7 to 12 and were simultaneously receiving psychopharmacological treatment (Waxmonsky et al., 2013). Researchers specified that the emotional instability seen in ADHD did not necessarily mean there would also be cyclical mood changes as with bipolar disorder (Waxmonsky et al., 2013). Therefore, the focus of this study was on affect regulation; however, it provided information regarding dysregulation within a unique population and showed how group therapy could be an effective method of treatment. During the nine weeks of treatment, children’s moods improved and became more stable, and their overall functioning improved (Waxmonsky et al., 2013). Given the small sample

size of this pilot study, more work in the area of improving emotion recognition is crucial to social-cognitive development. Additionally, more work in this area of study may potentially provide evidence for this form of treatment with DHH children with bipolar disorder.

Literature regarding DHH inpatients was collected to better understand diagnoses and issues concerning assessment and treatment (Haskins, 2004). Researchers recommend that clinicians have linguistic competency and experience in the field, “staff members who are experts in manual communication and deaf culture, as well as with the diagnoses and treatments of major mental illnesses” (Haskins, 2004, p. 439). A year’s worth of patient records ( $n=43$ ) were reviewed to collect information regarding hearing status or identification, linguistic background, cognitive issues, intelligence, personality, mood, development, and substance abuse history. Approximately 19% of the patients were diagnosed with bipolar disorder ( $n=8$ ), among a number of other comorbid diagnoses. Additionally, Haskins (2004) reviewed the history of lawsuits that led to the establishment of Deaf psychiatric inpatient units (e.g. the inpatient units in Maryland and North Carolina). In light of these lawsuits, Haskins (2004) recommended direct access to communication via staff fluent in sign language as opposed to indirect access to care via interpreters. This resolution can also cut the cost and help clarify diagnoses as opposed to losing valuable information in the process of translation and potentially excluding or oppressing the individual. Researchers suggested that there was, and is, a strong need for culturally and linguistically competent clinicians (Haskins, 2004). These case studies, a pilot study, and review of patient records provide preliminary information regarding issues of prevalence, clinician’s competency, communication, and organizational issues as it relates to DHH individuals with bipolar disorder.



Available literature recognizes issues regarding diagnostic clarity, prevalence rates, and treatment of pediatric bipolar disorder. For pediatric bipolar disorder in DHH children, this information is scarcer. As such, it is apparent that more information regarding this population is necessary. With the available information regarding the importance of culturally and linguistically competent clinicians (Diaz et al., 2013; Landsberger et al., 2014), this may also serve DHH children with bipolar disorder to receive treatment in a group of peers with similar barriers and strengths. Treatment regarding DHH children and adolescents with bipolar disorder requires further investigation. Literature indicates that children with bipolar disorder, both DHH and hearing individuals, could use support with neurocognition (Bearden, Hoffman, & Cannon, 2001; Bearden, et al., 2006; Bearden, et al., 2007; Joseph et al., 2008; Pavuluri, 2006), emotion recognition (McClure et al., 2005), and access to treatment (Kowatch et al., 2005; Miklowitz et al., 2013; Waxmonsky et al., 2013; Miklowitz et al., 2014). As such, a culturally and linguistically tailored-treatment could be used to support DHH individuals with pediatric bipolar disorder.

### **Where to Begin?**

Future research could evaluate the effectiveness of group therapy as an enhancement to psychopharmacological intervention, individual psychotherapy, and psychoeducation with families. Given the importance of emotional awareness in social interactions and survival (Lewis, et al., 2008), and deficits of emotional awareness in individuals with bipolar disorder (Bearden et al., 2001; Joseph et al., 2008; McClure et al., 2005), group therapy may improve social interactions and feelings of relatedness. Ideally, research could investigate the impact of group therapy for those who are DHH and experiencing mood dysregulation. Nonetheless, several issues with a therapeutic group for DHH children with bipolar disorder remain (e.g., access to communication and availability

of culturally appropriate clinicians). Research studies could however, provide group therapy to DHH children with bipolar disorder by working with an interpreter as done in a previous case study (Markowitz et al., 1984).

A brief overview of the available literature is the first step in supporting DHH children with bipolar disorder, given that there is little scientific literature or suggested therapeutic treatments with- and for- this population. Issues remain concerning prevalence rates of DHH individuals with psychiatric disorders (Appleford, 2003; Diaz et al., 2013). While there is literature indicating differences in spatial working memory, problem-solving, and other executive functioning tasks with children with pediatric bipolar disorder, there is no neurocognitive information regarding DHH children with bipolar disorder. Similarly, social-emotional differences remains untracked for DHH children with bipolar disorder. While there is a dearth of literature regarding available treatments with general populations of children with bipolar disorders, there is even less information regarding DHH children. The theme of gaps in research concerning DHH pediatric bipolar disorder is prevalent in all areas of diagnosis and treatment literature. Effective, evidence-based treatment regarding DHH children and adolescents with pediatric bipolar disorder certainly needs further investigation.

### **Contact Information:**

Hannah A. Joharchi  
Gallaudet University Department of Psychology  
800 Florida Ave., NE  
Washington, D.C. 20002  
Phone: 202-651-5540  
Hannah.joharchi@gallaudet.edu

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM5)*. Washington, DC: American Psychiatric Publication.
- Appleford, J. (2003). Clinical activity within a specialist mental health service for deaf people: Comparison with a general psychiatric service. *Psychiatric Bulletin*, 27, 375-377. Retrieved from <http://pb.rcpsych.org/content/pbrpsych/27/10/375.full.pdf>
- Aydemir, O., Akkaya, C., Uykur, B., & Erol, A. (2013). Effect of facial emotion recognition on subjective psychosocial functioning in bipolar patients. *Acta Psychiatrica Scandinavica*, 127(5), 412-413.
- Barrett, L. F., & Russell, J. A. (Eds.). (2015). *The psychological construction of emotion*. New York, NY: The Guilford Press.
- Bearden, C. E., Glahn, D. C., Caetano, S., Olvera, R. L., Fonseca, M., Najt, P., Hunter, K., Pliszka, S.R. & Soares, J. C. (2007). Evidence for disruption in prefrontal cortical functions in juvenile bipolar disorder. *Bipolar Disorders*, 9(s1), 145-159.
- Bearden, C. E., Glahn, D. C., Monkul, E. S., Barrett, J., Najt, P., Villarreal, V., & Soares, J. C. (2006). Patterns of memory impairment in bipolar disorder and unipolar major depression. *Psychiatry Research*, 142(2), 139-150.
- Bearden, C. E., Hoffman, K. M., & Cannon, T. D. (2001). The neuropsychology and neuroanatomy of bipolar affective disorder: a critical review. *Bipolar Disorders*, 3(3), 106-150.
- Chuang, Z. J., & Wu, C. H. (2004, June). Emotion recognition using acoustic features and textual content. In *Multimedia and Expo, 2004. ICME'04. 2004 IEEE International Conference* (Vol. 1, pp. 53-56). IEEE.

- Diaz, D. R., Landsberger, S. A., Povlinski, J., Sheward, J., & Sculley, C. (2013).  
Psychiatric disorder prevalence among deaf and hard-of-hearing outpatients.  
*Comprehensive Psychiatry*, 54(7). doi:10.1016/j.comppsy.2013.04.004
- Etain, B., Henry, C., Bellivier, F., Mathieu, F., & Leboyer, M. (2008). Beyond genetics:  
childhood affective trauma in bipolar disorder. *Bipolar Disorders*, 10, 867-876.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*, 4th edition. Los  
Angeles, California: Sage Publications Incorporated.
- Gupta, M., & Caddy, J. (2007). Deaf client with bipolar illness: a case report. *Clinical  
Practice and Epidemiology in Mental Health: CP & EMH*, 3(19).  
doi:10.1186/1745-0179-3-19
- Haskins, B. G. (2004). Serving deaf adult psychiatric inpatients. *Psychiatric  
Services*, 55(4), 439-441.
- Hoertnagl, C. M., Muehlbacher, M., Biedermann, F., Yalcin, N., Baumgartner, S.,  
Schwitzer, G., Deisenhammer, E.A., Hausmann, A., Kemmler, G., Benecke, C., &  
Hofer, A. (2011). Facial emotion recognition and its relationship to subjective and  
functional outcomes in remitted patients with bipolar I disorder. *Bipolar  
Disorders*, 13(5-6), 537-544.
- Joseph, M. F., Frazier, T. W., Youngstrom, E. A., & Soares, J. C. (2008). A quantitative  
and qualitative review of neurocognitive performance in pediatric bipolar  
disorder. *Journal of Child and Adolescent Psychopharmacology*, 18(6), 595-605.
- Juvenile Bipolar Research Foundation (2016). *Published articles by JBRF researchers*.  
Retrieved from <http://www.jbrf.org/publications-by-jbrf-researchers/>
- Kieseppa, T., Partonen, T., Haukka, J., Kaprio, J., & Lonqvist, J. (2006). High

- concordance of bipolar I disorder in a nationwide sample of twins. *American Journal of Psychiatry*, 161, 10, 1814-1821.
- Landsberger, S. A., Diaz, D. R., Spring, N. Z., Sheward, J., & Sculley, C. (2014). Psychiatric diagnosis and psychosocial needs of outpatient deaf children and adolescents. *Child Psychiatry and Human Development*, 45. doi: 10.1007/s10578-013-0375-9
- Landsberger, S. A., Sajid, A., Schmelkin, L., Diaz, D. R., & Weiler, C. (2013). Assessment and treatment of deaf adults with psychiatric disorders: a review of the literature for practitioners. *Journal of Psychiatric Practice*, 19(2), 87-97.
- Kim, P., Arizpe, J., Rosen, B.H., Varun Razdan, B.S., Haring, C.T., Jenkins, S.E., Deveney, C.M., Brotman, M.A., Blair, J.R., Pine, D.S., Baker, C.I., & Leibenluft, E. (2013). Impaired fixation to eyes during facial emotion labeling in children with bipolar disorder or severe mood dysregulation. *Journal of Psychiatry for Neuroscience*, 38(6). doi: 10.1503/jpn.120232
- Kowatch, R. A., Fristad, M., Birmaher, B., Wagner, K. D., Findling, R. L., & Hellander, M. (2005). Treatment guidelines for children and adolescents with bipolar disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44(3), p. 213-235. Retrieved from <http://www.bpchildren.org/files/Download/TreatmentGuidelines.pdf>
- Lewis, M., Haviland-Jones, J.M., & Barrett, L. F. (2008). *Handbook of emotions* (Eds.) New York, New York: The Guilford Press.
- Margulies, D. M., Weintraub, S., Basile, J., Grover, P. J., & Carlson, G. A. (2012). Will disruptive mood dysregulation disorder reduce false diagnosis of bipolar disorder in children? *Bipolar Disorders*, 14(5), 488-496.

- Markowitz, J. C., & Ninger, J. E. (1984). A case report of mania and congenital deafness. *The American Journal of Psychiatry*, 141(7), 894-5.
- Maxwell-McCaw, D. L., Leigh, I. W., & Marcus, A. (2000). Social identity in deaf culture: A comparison of ideologies. *JADARA*, 33(3). Retrieved from <http://martintolley.com/DevChild/documents/socialidentityindeafculture.pdf>
- McClure, E. B., Pope, K., Hoberman, A. J., Pine, D. S., & Leibenluft, E. (2003). Facial expression recognition in adolescents with mood and anxiety disorders. *The American Journal of Psychiatry*, 160(6), p. 1172-1174. Retrieved from [http://www.nctsn.org/nctsn\\_assets/Articles/139.pdf](http://www.nctsn.org/nctsn_assets/Articles/139.pdf)
- McClure, E. B., Treland, J. E., Snow, J., Schmajuk, M., Dickstein, D. P., Towbin, K. E., Charney, D.S., Pine, D.S., & Leibenluft, E. (2005). Deficits in social cognition and response flexibility in pediatric bipolar disorder. *The American Journal of Psychiatry*, 162(9), p. 1644-1651.
- Miklowitz, D. J., Schneck, C. D., George, E. L., Taylor, D. O., Sugar, C. A., Birmaher, B., Kowatch, R.A., DelBello, M.P., & Axelson, D. A. (2014). Pharmacotherapy and family-focused treatment for adolescents with Bipolar I and II disorders: A 2-year randomized trial. *The American Journal of Psychiatry*, 171(6), 658–667. doi:10.1176/appi.ajp.2014.13081130
- Miklowitz, D. J., Schneck, C. D., Singh, M. K., Taylor, D. O., George, E. L., Cosgrove, V. E., Howe, M.E., Dickinson, L.M., Garber, J., Chang, K. D. (2013). Early intervention for symptomatic youth at risk for bipolar disorder: A randomized trial of family-focused therapy. *Journal of the American Academy of Child and Adolescent Psychiatry*, 52(2), 121–131. doi:10.1016/j.jaac.2012.10.007

- Pavuluri, M. N., Schenfel, L. S., Aryal, S., Harral, E. M., Hill, S. K., Herbener, E. S., & Sweeney, J. A. (2006). Neurocognitive function in unmedicated manic and medicated euthymic pediatric bipolar patients. *The American Journal of Psychiatry*, 163(2), p. 286-293. Retrieved from [https://www.cognitiongroup.com/publication/Bipolar\\_paediatric\\_paper\\_Cogtest\\_Pavuluri\\_et\\_al\\_Am\\_J\\_Psych\\_2006.pdf](https://www.cognitiongroup.com/publication/Bipolar_paediatric_paper_Cogtest_Pavuluri_et_al_Am_J_Psych_2006.pdf)
- Rick, B. A., Grimley, M. E., Schmajuk, M., Blair, K. S., Blair, R. J., & Leibenluft, E. (2008). Face emotion labeling deficits in children with bipolar disorder and severe mood dysregulation. *Development and Psychopathology*, 20(2), p. 529–546. doi:10.1017/S0954579408000266
- Rosen, H. R., & Brendan, A. R. (2010). Neurocognitive correlates of emotional stimulus processing in pediatric bipolar disorder: A review. *Postgraduate Medicine*, 122(4), p. 94-104. doi: 10.3810/pgm.2010.07.2177
- Sala, R., Strober, M. A., Axelson, D. A., Gill, M. K., Castro-Fornieles, J., Goldstein, T. R., Goldstein, B.I., Ha, W., Liao, F., Iyengar, S., Yen, S., Hower, H., Hunt, J., Dickstein, D.P., Ryan, N.D, Keller, M.B., Birmaher, B. (2014). Effects of comorbid anxiety disorders on the longitudinal course of pediatric bipolar disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 53(1), 10.1016/j.jaac.2013.09.020. doi:10.1016/j.jaac.2013.09.020
- Samamé, C., Martino, D. J., & Strejilevich, S. A. (2012). Social cognition in euthymic bipolar disorder: Systematic review and meta- analytic approach. *Acta Psychiatrica Scandinavica*, 125(4), 266-280.

Waxmonsky, J. G., Wymbs, F., Pariseau, M. E., Belin, P. J., Waschbusch, D. A., Babocsai, L., Fabiano, G.A., Akinnusi, O.O., Haak, J.L., & Pelham, W. E. (2013). novel group therapy for children with ADHD and severe mood dysregulation. *Journal of Attention Disorders*, 17(6), 527–541. doi:10.1177/1087054711433423



Table 1.

*Miscellaneous Resources.\**

Name of the Organization	Website	Brief Description
Deaf Counseling Center	<a href="http://www.deafcounseling.com/the-facts-about-bipolar-disorder/">http://www.deafcounseling.com/the-facts-about-bipolar-disorder/</a>	Video explanation of bipolar disorder in ASL.
Weill Cornell Medical College	<a href="http://www2.med.cornell.edu/cgi-bin/WebObjects/PublicA.wa/viewService?servicesID=1467&amp;website=wmc+psych">http://www2.med.cornell.edu/cgi-bin/WebObjects/PublicA.wa/viewService?servicesID=1467&amp;website=wmc+psych</a>	DHH mental health programs including psychiatric care placements.
National Association of the Deaf (NAD)	<a href="https://nad.org/issues/health-care">https://nad.org/issues/health-care</a>	This website discusses the discrimination of DHH individuals by their mental health and health care providers.
Juvenile Bipolar Research Foundation	<a href="http://www.jbrf.org/publications-by-jbrf-researchers/">http://www.jbrf.org/publications-by-jbrf-researchers/</a>	Research and resources for general children populations with bipolar

		disorder.
Semel Institute at University of California, Los Angeles (UCLA)	<a href="https://www.semel.ucla.edu/mood/about">https://www.semel.ucla.edu/mood/about</a>	Information about bipolar disorder and services at UCLA.
Mental Health America	<a href="http://www.mentalhealthamerica.net/conditions/bipolar-disorder-children">http://www.mentalhealthamerica.net/conditions/bipolar-disorder-children</a>	List of symptoms of bipolar disorder and a list of resources.

\*While the authors acknowledge that it is limiting to provide only website contact information for these resources, this is currently the most effective way to learn more about these resources in a general way.

Table 2.

*Literature Regarding Treatment With DHH Individuals With Mood Dysregulation Disorders.*

Title of the Article	Authors	Summary
Deaf Client With Bipolar Illness: A Case Report	Gupta and Caddy	A Deaf woman communicated via various modalities with professionals who provided treatment for bipolar disorder.
A Case Report of Mania and Congenital Deafness	Markowitz and Nininger	A Deaf woman participated in group therapy via an interpreter with hearing individuals in an inpatient setting.
A Novel Group Therapy for Children With ADHD and Severe Mood Dysregulation	Waxmonsky, Wymbs, Pariseau, Belin, Waschbusch, Babocsai, Fabiano, Akinnusi, Haak, and Pelham	A group therapy treatment plan was piloted with seven children with dysregulated mood and executive functioning difficulties.